AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended):   A method for determining a motion compensation (MC) mode using a signal encoding apparatus comprising a sum of absolute difference (SAD) receiving unit, a minimum value judgment unit, a first selection unit and a second selection unit, the method comprising:

(a) receiving, at the SAD receiving unit, ~~as~~ inputs comprising a forward frame sum of absolute difference (SAD), a sum of a forward top field SAD and a forward bottom field SAD, a backward frame SAD, and a sum of a backward top field SAD and a backward bottom field SAD;

(b) identifying, at the minimum value judgment unit, a minimum value of the inputs received in step (a);

(c) if the minimum value is smaller than a predetermined threshold value, selecting an MC mode corresponding to the minimum value at the first selection unit; and

(d) if the minimum value is not smaller than the predetermined threshold value, selecting one of modes for performing an interpolative field MC and an interpolative frame MC at the second selection unit,

wherein operations (c) and (d) are performed without using any of an interpolative frame SAD, an interpolative top field SAD, and an interpolative bottom field SAD.

2. (original): The method of claim 1, wherein step (c) comprises:

if the minimum value is a forward frame SAD and is smaller than the predetermined threshold value, selecting a forward frame MC mode, and if the minimum value is the sum of the forward top field SAD and the forward bottom field SAD and is smaller than the predetermined threshold value, selecting a forward field MC mode.

3. (original): The method of claim 1, wherein step (c) comprises:

if the minimum value is the backward frame SAD and is smaller than the predetermined threshold value, selecting a backward frame MC mode, and if the minimum value is the sum of the backward top field SAD and the backward bottom field SAD and is smaller than the predetermined threshold value, selecting a backward field MC mode.

4. (original): The method of claim 1, wherein step (d) comprises:

if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field SAD, and a predetermined OFFSET, outputting the interpolative frame MC mode, and if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is not smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the

backward bottom field SAD, and the predetermined OFFSET, selecting the interpolative field

MC mode.

    5. (original): The method of claim 1, wherein in step (d), one of the interpolative frame

MC mode and the interpolative field MC mode is selected according to a predetermined

condition made by combination of SADs.

    6. (previously presented): An apparatus for determining a motion compensation (MC)

mode, comprising:

    a sum of absolute difference (SAD) receiving unit which receives as inputs a forward

frame SAD, a sum of a forward top field SAD and a forward bottom field SAD, a backward

frame SAD, and a sum of a backward top field SAD and a backward bottom field SAD;

    a minimum value judgment unit which identifies a minimum value of the inputs received

by the SAD receiving unit;

    a first selection unit which selects an MC mode corresponding to the minimum value if

the minimum value is smaller than a predetermined threshold value; and

    a second selection unit which, if the minimum value is not smaller than the

predetermined threshold value, selects one of modes for performing an interpolative field MC

and an interpolative frame MC,

    wherein selecting the MC mode and the one of the modes for performing the interpolative

field MC and the interpolative frame MC is performed without using any of an interpolative

frame SAD, an interpolative top field SAD, and an interpolative bottom field SAD.

7. (original): The apparatus of claim 6, wherein if the minimum value is the forward frame SAD and is smaller than the predetermined threshold value, the first selection unit selects a forward frame MC mode, and if the minimum value is the sum of the forward top field SAD and the forward bottom field SAD and is smaller than the predetermined threshold value, the first selection unit selects a forward field MC mode.

8. (original): The apparatus of claim 6, wherein if the minimum value is the backward frame SAD and is smaller than the predetermined threshold value, the first selection unit selects a backward frame MC mode, and if the minimum value is the sum of the backward top field SAD and the backward bottom field SAD and is smaller than the predetermined threshold value, the first selection unit selects a backward field MC mode.

9. (original): The apparatus of claim 6, wherein if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field SAD, and a predetermined OFFSET, the second selection unit outputs an interpolative frame MC mode, and if the minimum value is not smaller than the predetermined threshold value and the sum of the forward frame SAD and the backward frame SAD is not smaller than the sum of the forward frame SAD, the forward top field SAD, the forward bottom field SAD, the backward frame SAD, the backward top field SAD, the backward bottom field

SAD, and the predetermined OFFSET, the second selection unit outputs an interpolative field

MC mode.

10. (original): The apparatus of claim 6, wherein the second selection unit selects one of

the interpolative frame MC mode and the interpolative field MC mode according to a

predetermined condition made by combination of SADs.

11. (previously presented):   A picture encoding apparatus comprising:

a forward sum of absolute difference (SAD) calculation unit which calculates a forward

frame SAD, a forward top field SAD, and a forward bottom field SAD;

a backward SAD calculation unit which calculates a backward frame SAD, a backward

top field SAD, and a backward bottom field SAD; and

a motion compensation (MC) mode determination unit which receives the six SADs as

inputs, and determines an MC mode based on the six SADs,

wherein the determined MC mode is one of modes for performing a forward frame MC, a

backward frame MC, a forward field MC, a backward field MC, an interpolative frame MC, and

an interpolative field MC, and

wherein the MC mode is determined without using any of an interpolative frame SAD, an

interpolative top field SAD, and an interpolative bottom field SAD.

12. (previously presented):   A picture encoding apparatus comprising:

a forward sum of absolute difference (SAD) calculation unit which calculates a forward frame SAD, a forward top field SAD, and a forward bottom field SAD;

a backward SAD calculation unit which calculates a backward frame SAD, a backward top field SAD, and a backward bottom field SAD; and

a motion compensation (MC) mode determination unit which receives the SADs as inputs,

wherein the MC mode determination unit comprises:

a SAD receiving unit which receives as inputs the forward frame SAD, a sum of the forward top field SAD and the forward bottom field SAD, the backward frame SAD, and a sum of the backward top field SAD and the backward bottom field SAD;

a minimum value judgment unit which identifies a minimum value among the inputs received by the SAD receiving unit;

a first selection unit which selects an MC mode corresponding to the minimum value if the minimum value is smaller than a predetermined threshold value; and

a second selection unit which, if the minimum value is not smaller than the predetermined threshold value, selects one of modes for performing an interpolative field MC and an interpolative frame MC,

wherein selecting the MC mode and the one of the modes for performing the interpolative field MC and the interpolative frame MC is performed without using any of an interpolative frame SAD, an interpolative top field SAD, and an interpolative bottom field SAD.

13. (previously presented): A computer readable recording medium having recorded thereon a program for executing a method of determining a motion compensation (MC) mode in a general-purpose computer, the method comprising:

(a) receiving as inputs a forward frame sum of absolute difference (SAD), a sum of a forward top field SAD and a forward bottom field SAD, a backward frame SAD, and a sum of a backward top field SAD and a backward bottom field SAD;

(b) identifying a minimum value of the inputs received in step (a);

(c) if the minimum value is smaller than a predetermined threshold value, selecting an MC mode corresponding to the minimum value; and

(d) if the minimum value is not smaller than the predetermined threshold value, selecting one of modes for performing an interpolative field MC and an interpolative frame MC,

wherein operations (c) and (d) are performed without using any of an interpolative frame SAD, an interpolative top field SAD, and an interpolative bottom field SAD.

14. (canceled)

15. (canceled)

16. (previously presented): The apparatus of claim 6, wherein the first selection unit and the second selection unit select a final MC mode only using the forward frame SAD, the sum of the forward top field SAD and the forward bottom field SAD, the backward frame SAD, and the sum of the backward top field SAD and the backward bottom field SAD.

17. (previously presented): The method of claim 1, wherein operations (c) and (d) are performed without performing an initial interpolative MC to produce the interpolative frame SAD, the interpolative top field SAD, and the interpolative bottom field SAD.

18. (previously presented): The apparatus of claim 6, wherein the selecting the MC mode and the one of the modes for performing the interpolative field MC and the interpolative frame MC is performed without performing an initial interpolative MC to produce the interpolative frame SAD, the interpolative top field SAD, and the interpolative bottom field SAD.

19. (previously presented): The apparatus of claim 11, wherein the MC mode is determined without performing an initial interpolative MC to produce the interpolative frame SAD, the interpolative top field SAD, and the interpolative bottom field SAD.

20. (previously presented): The apparatus of claim 12, wherein the selecting the MC mode and the one of the modes for performing the interpolative field MC and the interpolative frame MC is performed without performing an initial interpolative MC to produce the interpolative frame SAD, the interpolative top field SAD, and the interpolative bottom field SAD.

21. (previously presented): The computer readable recording medium of claim 13, wherein operations (c) and (d) are performed without performing an initial interpolative MC to

produce the interpolative frame SAD, the interpolative top field SAD, and the interpolative

bottom field SAD.